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☐    1. **Checkpointing schemes for fast restart in main memory database system**
Dongho Lee; Haengrae Cho;
Communications, Computers and Signal Processing, 1997. '10 Years PACRIM Networking the Pacific Rim'. 1997 IEEE Pacific Rim Conference on
Volume 2,  20-22 Aug. 1997 Page(s):663 - 668 vol.2
Digital Object Identifier 10.1109/PACRIM.1997.620349

AbstractPlus | Full Text: PDF(636 KB)   **IEEE CNF**

☐    2. **Per-user checkpointing for mobility database failure restoration**
Yi-Bing Lin;
Mobile Computing, IEEE Transactions on
Volume 4,  Issue 2,  March-April 2005 Page(s):189 - 194
Digital Object Identifier 10.1109/TMC.2005.28

AbstractPlus | References | Full Text: PDF(448 KB)   **IEEE JNL**

☐    3. **Comparative analysis of different models of checkpointing and recovery**
Nicola, V.F.; van Spanje, J.M.;
Software Engineering, IEEE Transactions on
Volume 16,  Issue 8,  Aug. 1990 Page(s):807 - 821
Digital Object Identifier 10.1109/32.57620

AbstractPlus | Full Text: PDF(984 KB)   **IEEE JNL**

☐    4. **Experimental evaluation of concurrent checkpointing and rollback-recove**
Bhargava, B.; Lian, S.-R.; Leu, P.-J.;
Data Engineering, 1990. Proceedings. Sixth International Conference on
5-9 Feb. 1990 Page(s):182 - 189
Digital Object Identifier 10.1109/ICDE.1990.113468

AbstractPlus | Full Text: PDF(732 KB)   **IEEE CNF**

☐    5. **Restoration scheme of mobility databases by mobility learning and predi networks**
Joon-Min Gil; Chan Yeol Park; Chong-Sun Hwang; Doo-Soon Park; Jin Gon Sl Jeong;
Selected Areas in Communications, IEEE Journal on
Volume 19,  Issue 10,  Oct. 2001 Page(s):1962 - 1973
Digital Object Identifier 10.1109/49.957311

AbstractPlus | References | Full Text: PDF(208 KB)   **IEEE JNL**

6. **A single phase distributed commit protocol for main memory database s**
Inseon Lee; Yeom, H.Y.;
Parallel and Distributed Processing Symposium., Proceedings International, IP
Abstracts and CD-ROM
15-19 April 2002 Page(s):14 - 21
Digital Object Identifier 10.1109/IPDPS.2002.1015485

AbstractPlus | Full Text: PDF(318 KB)    IEEE CNF

7. **The SPEEDES persistence framework and the standard simulation archit**
Steinman, J.S.; Wong, J.W.;
Parallel and Distributed Simulation, 2003. (PADS 2003). Proceedings. Sevent
on
10-13 June 2003 Page(s):11 - 20
Digital Object Identifier 10.1109/PADS.2003.1207416

AbstractPlus | Full Text: PDF(438 KB)    IEEE CNF

8. **Fault-tolerance of functional programs based on the parallel graph reduc**
Kitakami, M.; Kubota, S.; Ito, H.;
Dependable Computing, 2001. Proceedings. 2001 Pacific Rim International Sy
17-19 Dec. 2001 Page(s):319 - 322
Digital Object Identifier 10.1109/PRDC.2001.992715

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**1** **A Self Manageable Infrastructure for Supporting Web-based Simulations**                    ■
Yingping Huang, Xiaorong Xiang, Gregory Madey
April 2004  **Proceedings of the 37th annual symposium on Simulation**

Full text available: 📄 pdf(574.08 KB)    Additional Information: full citation, abstract

> In this paper, we describe the design and implementationof a self-manageable multi-tiered infrastructure tosupport web-based scientific simulations. This infrastructuredemonstrates not only the successful integration ofWeb servers, simulation servers, database servers, reportsservers, data warehousing and mining, but also the abilityto achieve self manageability: self-configuring, self-healing,self-protecting and self-optimizing. A scientificsimulation program, NOMSIM (Natural Organic MatterSimu ...

**2** Concurrency: Concurrency in database systems: a simulation study                    ■
R. Munz, G. Krenz
August 1977 **Proceedings of the 1977 ACM SIGMOD international conference on Management of data**

Full text available: 📄 pdf(876.80 KB)    Additional Information: full citation, abstract, references, citings

> A simulation model of concurrent updates in a database system is presented. This model is used, to answer the following questions: How frequent are deadlocks in certain environments? What about concurrency and wait-time of user processes as a function of the synchronization method used? In case of a deadlock what are useful criteria to select the process to be rolled back? How many checkpoints make sense?

**3** Autonomic Web-Based Simulation                    ■
Yingping Huang, Gregory Madey
April 2005 **Proceedings of the 38th annual Symposium on Simulation**

Full text available: 📄 pdf(264.78 KB)    Additional Information: full citation, abstract

> Many scientific simulations are large programs which despite careful debugging and testing will probably contain errors when deployed to the Web for use. Based on the assumption that such scientific simulations do contain errors and the underlying computing systems do fail due to hardware or software errors, the authors investigate and explore robust methods for developing and deploying autonomic web-based simulations(AWS) based on the Vision of Autonomic Computing.

**4** Performance evaluation of global reading of entire databases                    ■
C. Pu, C. H. Hong, J. M. Wha

January 2000 **Proceedings of the first international symposium on Databases in parallel and distributed systems**

Full text available: ⬛ pdf(919.51 KB)     Additional Information: full citation, abstract, references, citings, index terms

> Using simulation and probabilistic analysis, we study the performance of an algorithm to read entire databases with locking concurrency control allowing multiple readers or an exclusive writer. The algorithm runs concurrently with the normal transaction processing (on-the-fly) and locks the entities in the database one by one (incremental). The analysis compares different strategies to resolve the conflicts between the global read algorithm and update. Since the algorithm i ...

**5** A novel checkpointing scheme for distributed database systems                    ⬛

Slawomir Pilarski, Tiko Kameda

April 1990 **Proceedings of the ninth ACM SIGACT-SIGMOD-SIGART symposium on Principles of database systems**

Full text available: ⬛ pdf(1.08 MB)     Additional Information: full citation, abstract, references, citings, index terms

> We present a new checkpointing scheme for a distributed database system. Our scheme records the states of some selected data items and can be executed at any time without stopping other activities in the database system. It makes use of "shadows" of data items to make sure that the collected data item values are "transaction-consistent". Storage overhead is low, since at most one shadow is needed for each data item.

**6** The design and implementation of a log-structured file system                    ⬛

Mendel Rosenblum, John K. Ousterhout

February 1992 **ACM Transactions on Computer Systems (TOCS)**, Volume 10 Issue 1

Full text available: ⬛ pdf(1.97 MB)     Additional Information: full citation, abstract, references, citings, index terms, review

> This paper presents a new technique for disk storage management called a log-structured file system. A log-structured file system writes all modifications to disk sequentially in a log-like structure, thereby speeding up both file writing and crash recovery. The log is the only structure on disk; it contains indexing information so that files can be read back from the log efficiently. In order to maintain large free areas on disk for fast writing, we divide the log into
> **Keywords**: Unix, disk storage management, fast crash recovery, file system organization, file system performance, high write performance, log-structured, logging

**7** Crash recovery for real-time main memory database systems                    ⬛

Jing Huang, Le Gruenwald

February 1996 **Proceedings of the 1996 ACM symposium on Applied Computing**

Full text available: ⬛ pdf(565.80 KB)     Additional Information: full citation, references, index terms

**Keywords**: database, real-time, recovery

**8** Impact of timing constraints on real-time database recovery                    ⬛

Jing Huang, Le Gruenwald

November 1996 **Proceedings of the workshop on on Databases: active and real-time**

Full text available: ⬛ pdf(465.79 KB)     Additional Information: full citation, references, index terms

**9** Effects of the checkpoint interval on time and space in time warp

Bruno R. Preiss, Wayne M. Loucks, Ian D. Macintyre

July 1994 **ACM Transactions on Modeling and Computer Simulation (TOMACS)**, Volume 4 Issue 3

Full text available: 📄 pdf(1.85 MB)     Additional Information: full citation, abstract, references, citings, index terms, review

Optimistically synchronized parallel discrete-event simulation is based on the use of communicating sequential processes. Optimistic synchronization means that the processes proceed under the assumption that a synchronized execution schedule is fortuitous. Periodic checkpointing of the state of a process allows the process to roll back to an earlier state when synchronization errors are detected. This article examines the effects of varying the checkpoint interval on the execution time and ...

**Keywords**: Time Warp, checkpointing, discrete-event simulation, parallel simulation

**10** Extended ephemeral logging: log storage management for applications with long lived transactions

John S. Keen, William J. Dally

March 1997 **ACM Transactions on Database Systems (TODS)**, Volume 22 Issue 1

Full text available: 📄 pdf(566.34 KB)     Additional Information: full citation, references, index terms, review

**Keywords**: OLTP, disk management, logging, long transactions

**11** A case for shared instruction cache on chip multiprocessors running OLTP

Partha Kundu, Murali Annavaram, Trung Diep, John Shen

June 2004 **ACM SIGARCH Computer Architecture News**, Volume 32 Issue 3

Full text available: 📄 pdf(272.23 KB)     Additional Information: full citation, abstract, references

Due to their large code footprint, OLTP workloads suffer from significant I-cache miss rates on contemporary microprocessors. This paper analyzes the I-stream behavior of an OLTP workload, called the Oracle Database Benchmark (ODB), on Chip-Multiprocessors (CMP). Our results show that, although, the overall code footprint of ODB is large, multiple ODB threads running concurrently on multiple processors tend to access common code segments frequently, thus exhibiting significant constructive shari ...

**12** The architecture of a highly integrated simulation system

Michel Heydemann, Alain Plaignaud, Daniel Dure

June 1988 **Proceedings of the 25th ACM/IEEE conference on Design automation**

Full text available: 📄 pdf(479.09 KB)     Additional Information: full citation, abstract, references, index terms

A mechanism for integrating simulators into CAD systems has been implemented in order to provide high-performance interaction during the course of a design. This mechanism replaces slow text-based interfaces by a persistent programming technique where the database is viewed as an extension of dynamically allocated memory. Organization of simulation data and implementation of the interface mechanism are described.

**13** The SPEEDES Persistence Framework and the Standard Simulation Architecture

Dr. Jeffrey S. Steinman, Jennifer W. Wong

June 2003 **Proceedings of the seventeenth workshop on Parallel and distributed simulation**

Full text available: pdf(306.39 KB)     Additional Information: <u>full citation</u>, <u>abstract</u>, <u>index terms</u>
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This paper provides an overview of the SPEEDESpersistence framework that is currently used to automatecheckpoint/restart for the Joint Simulation System. Thepersistence framework interfaces are documented in thispaper and are proposed standards for the StandardSimulation Architecture.The persistence framework fundamentally keeps trackof memory allocations and pointer references within ahigh-speed internal database linked with applications.With persistence, an object, and the collection of object ...

### 14 A "flight data recorder" for enabling full-system multiprocessor deterministic replay

Min Xu, Rastislav Bodik, Mark D. Hill
May 2003 **ACM SIGARCH Computer Architecture News , Proceedings of the 30th annual international symposium on Computer architecture**, Volume 31 Issue 2
Full text available: pdf(311.95 KB)     Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>

Debuggers have been proven indispensable in improving software reliability. Unfortunately, on most real-life software, debuggers fail to deliver their most essential feature --- a faithful replay of the execution. The reason is non-determinism caused by multithreading and non-repeatable inputs. A common solution to faithful replay has been to record the non-deterministic execution. Existing recorders, however, either work only for datarace-free programs or have prohibitive overhead.As a step tow ...

### 15 Performance evaluation of extended storage architectures for transaction processing

Erhard Rahm
June 1992 **ACM SIGMOD Record , Proceedings of the 1992 ACM SIGMOD international conference on Management of data**, Volume 21 Issue 2
Full text available: pdf(1.47 MB)     Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

The use of non-volatile semiconductor memory within an extended storage hierarchy promises significant performance improvements for transaction processing. Although page-addressable semiconductor memories like extended memory, solid-state disks and disk caches are commercially available since several years, no detailed investigation of their use for transaction processing has been performed so far. We present a comprehensive simulation study that compares the performance of these storage ty ...

### 16 The impact of architectural trends on operating system performance

M. Rosenblum, E. Bugnion, S. A. Herrod, E. Witchel, A. Gupta
December 1995 **ACM SIGOPS Operating Systems Review , Proceedings of the fifteenth ACM symposium on Operating systems principles**, Volume 29 Issue 5
Full text available: pdf(2.03 MB)     Additional Information: <u>full citation</u>, <u>references</u>, <u>citings</u>, <u>index terms</u>

### 17 A performance study of concurrency control in a real-time main memory database system

Le Gruenwald, Sichen Liu
December 1993 **ACM SIGMOD Record**, Volume 22 Issue 4

Full text available: pdf(484.74 KB)     Additional Information: <u>full citation</u>, <u>abstract</u>, <u>index terms</u>

Earlier performance studies of concurrency control algorithms show that in a disk-resident real-time database system, optimistic algorithms perform better than two phase locking with higher priority (2PL-HP). In a main memory real-time database system, disk I/Os are eliminated and thus more transactions are enabled to meet their real-time constraints. Lack of disk I/Os in this environment requires concurrency control be re-examined. This paper conducts a simulation study to compare ...

**18** <u>System R: relational approach to database management</u>

M. M. Astrahan, M. W. Blasgen, D. D. Chamberlin, K. P. Eswaran, J. N. Gray, P. P. Griffiths, W. F. King, R. A. Lorie, P. R. McJones, J. W. Mehl, G. R. Putzolu, I. L. Traiger, B. W. Wade, V. Watson

June 1976 **ACM Transactions on Database Systems (TODS)**, Volume 1 Issue 2

Full text available: pdf(3.18 MB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>citings</u>, <u>index terms</u>

System R is a database management system which provides a high level relational data interface. The systems provides a high level of data independence by isolating the end user as much as possible from underlying storage structures. The system permits definition of a variety of relational views on common underlying data. Data control features are provided, including authorization, integrity assertions, triggered transactions, a logging and recovery subsystem, and facilities for maintaining ...

**Keywords**: authorization, data structures, database, index structures, locking, nonprocedural language, recovery, relational model

**19** <u>Database concurrency control: Queueing network models for concurrent transaction processing in a database system</u>

Keki B. Irani, Hing-Lung Lin

May 1979 **Proceedings of the 1979 ACM SIGMOD international conference on Management of data**

Full text available: pdf(938.32 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>citings</u>

This paper presents two queueing network models which correspond to different implementations of the lock management algorithm for concurrent transaction processing in a database system. These models are developed to investigate the effects of varying the granularity of locks and the degree of multiprogramming on the performance of a database system. A numerical example is presented for a set of apparently realistic parameters and its results are discussed. In addition to other conclusions, thes ...

**20** <u>Miscellaneous: Wanted: an application aware checkpointing service</u>

Colin Allison

September 1994 **Proceedings of the 6th workshop on ACM SIGOPS European workshop: Matching operating systems to application needs**

Full text available: pdf(506.82 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>

Checkpointing is an essential component of many application frameworks but OS kernels rarely offer assistance with this task although they are in a very good position to do so. OS process management could and should be extended to accommodate this common need and provide an application aware system service.

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